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A Six Month Creel Survey of Wabamun Lake, Alberta, 1968-69

by Charles B. Lane

Management Report No.12

Alberta Fish and Wildlife Division

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A SIX MONTH CREEL SURVEY OF WABAMUN LAKE, ALBERTA, 1968-69.

BY

CHARLES B. LANE

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DECEMBER, 1970

FISH AND WILDLIFE DIVISION

((DEPARTMENT OF LANDS AND FORESTS

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Introduction

The value of obtaining reliable estimates of the exploitation of fish populations by commercial and sport fishermen is becoming increasingly apparent to those involved in fishery management. Statistics from commercial fisheries are more readily available than creel data because of the necessary and relatively close supervision required to operate such enterprises. Qualitative and quantitative information concerning sport fisheries is scarce because a complete census is costly and time consuming.

Wabamun Lake (Figure 1) is a popular location for sport fishing and many other recreational activities. It lies within 50 miles of Edmonton, a city of approximately 400,000 people and has a Provincial Park located on its east shore. Several villages are also located around the lake. The lake also supports a commercial fishery. Within the last decade, angling through the ice has flourished and expanded to create an additional demand on the fish populations, particularly lake whitefish (Coregonus clupeaformis) and northern pike (Esox lucius). The effect of this recent increased pressure on the fishery resource has been the subject of considerable discussion and some controversy.

The purpose of the partial creel census conducted from November 1, 1968 to May 1, 1969 was to estimate the magnitude of the winter sport fishery on Wabamun Lake and to relate this form of exploitation to that resulting from commercial netting.

Most of the angler interviews and car counts were obtained by two crews of students from The Northern Alberta Institute of Technology,

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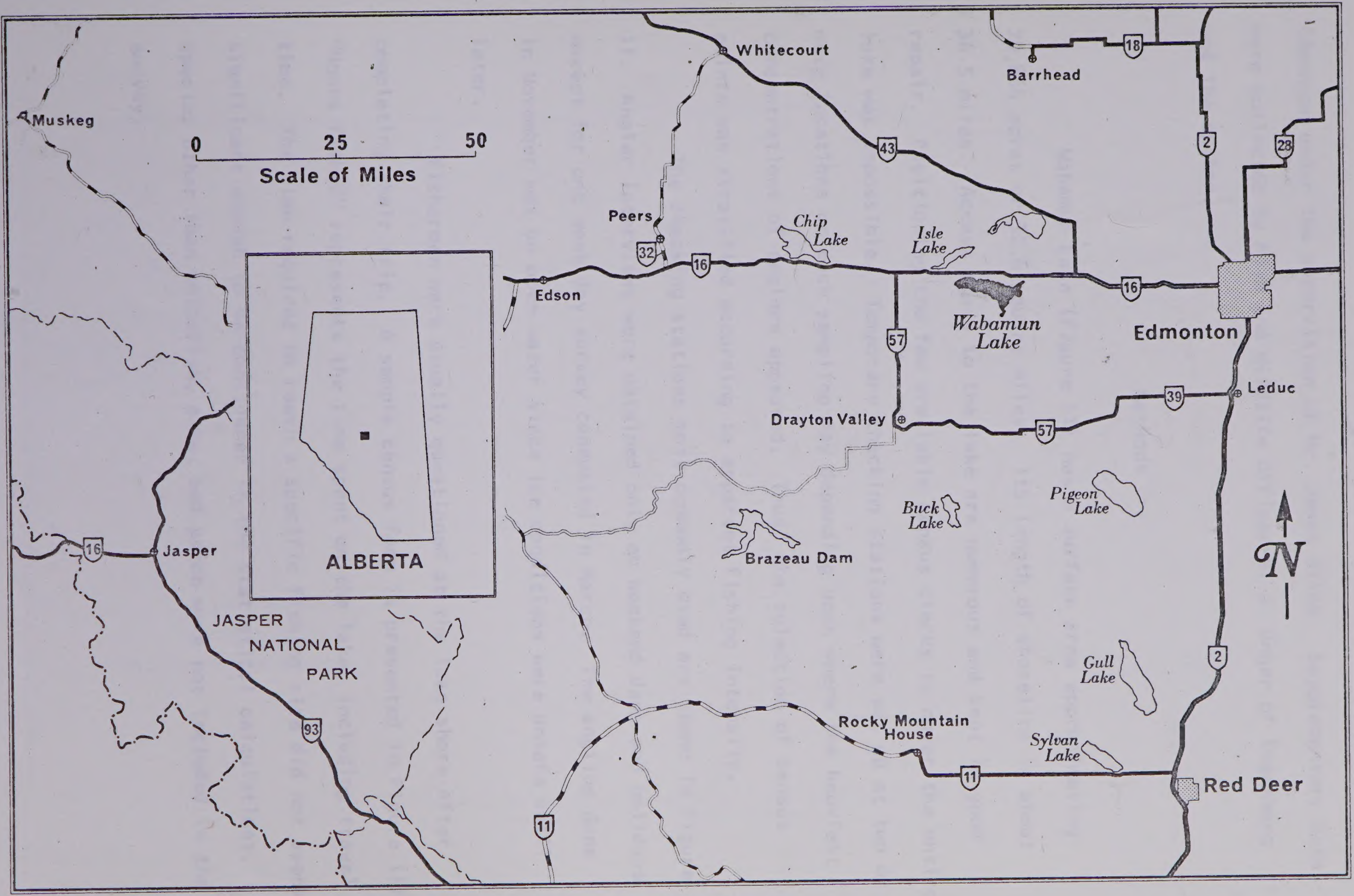

Figure I; Location of Wabamun Lake.

Edmonton under the supervision of Mr. James Allan. Supplementary data were collected by Fish and Wildlife Officer D. J. Unger of Evansburg and the author.

Methods

Wabamun Lake (Figure 11) has a surface area approximating 20,864 acres or 32.6 square miles. Its length of shoreline is about 36.5 miles. Access roads to the lake are numerous and kept in good repair. Positioning the few available census clerks to cover the entire lake was impossible. Temporary checking stations were set up at two or more locations on each sampling day depending upon where the heaviest concentrations of anglers appeared. Thus, the selection of census points was stratified according to apparent fishing intensity.

The checking stations most commonly used are shown in Figure 11. Angler interviews were obtained only on weekend days and holidays except for one week day survey conducted in March. The angling done in November was on open water since ice conditions were unsafe until later.

Fishermen were usually questioned at the lake shore after completing their trip. A sample census form is presented in Figure 111. "Hours fished" represents the time spent on the lake, including travel time. The time required to reach a specific fishing site did not appear significant enough to be considered in the statistical calculations. Species other than whitefish, pike, and perch were not included in the survey.

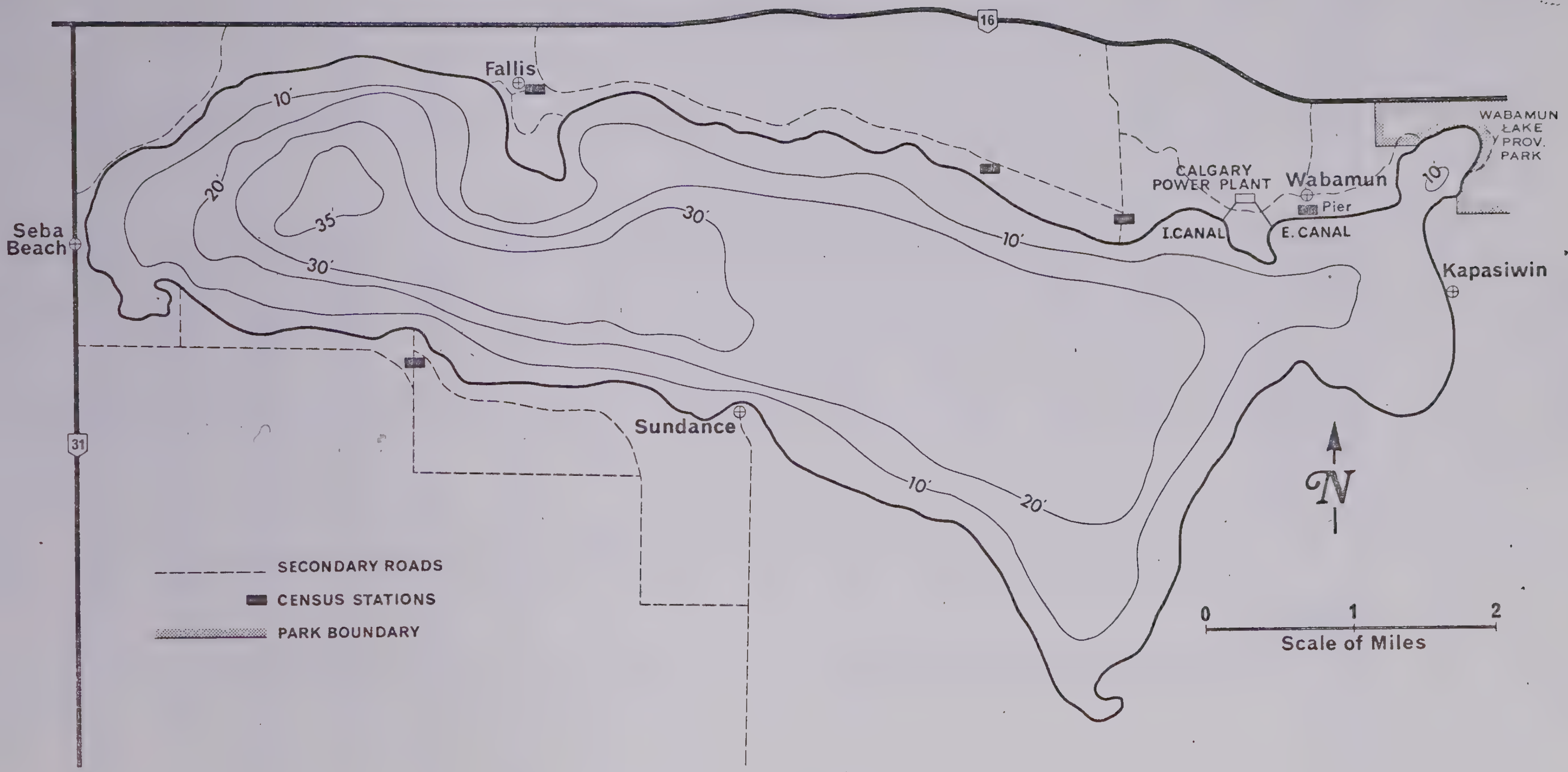

Figure II; Sketch map of Wabamun Lake showing depth contours and adjacent features.

Figure III. Sample creel census form

Number ______

CREEL CENSUS

Lake: ______________________ Air Temperature: ______________________

Date: ______________________ Wind: ______________________

Time: ______________________ Sky: ______________________

Anglers Per Car	Lines Per Car	Hours Fished To		Numbers of Fish Per Car			Type of Bait	Residence	Remarks
				Pike	Perch	Whitefish			

Fishing intensity was estimated by periodically touring the lake shore and counting the cars either on the ice or parked near an access point. The whole lake could be canvassed within one hour. Daily counts were made to include a variable sample of hourly intervals. The sample of counts was separated into week days and weekend days/holidays.

Final estimates of catch per unit effort, fishing pressure, and yield were obtained by extrapolating from six month averages calculated from the raw data. It was assumed that angling success on weekdays and weekend/holidays was equal.

While numbers of each species of fish caught were recorded during every angler interview; lengths, weights, and scale samples were taken on several occasions only. Enough fish were sampled to estimate reasonably the average length, weight, and age structure of the catch.

Results

Creel survey

The results of the creel survey are summarized in Table 1 and presented in more detail in Appendix Table 1. The success of the winter fishery is readily apparent. Anglers caught a total of 0.83 fish weighing 1.6 pounds for each hour of effort. Most of this catch (0.6 fish and 1.1 lbs./angler-hour) consisted of lake whitefish. Whitefish averaged 15.5 inches in fork length and weighed 1.7 pounds. The average weight for pike was 3.0 pounds. However, several fish taken from the power plant outlet canal were in the 10 to 20 pound range. In general,

Table 1. Summary of creel census survey, Wabamun Lake, November to May, 1968-69.

	Pounds per angler-hour	Fish per angler-hour	Average weight of fish, lbs.	Average fork length, ins.	Percentage catching at least one fish*		Miscellaneous Estimates
					Car	Angler	
Total	1.7	0.8	-	-	87.1	75.5	Average number of anglers per car = 2.5
Whitefish	1.1	0.6	1.7	15.5	57.9	51.3	Total hours fished = 140,816
Pike	0.6	0.2	3.0	21.2	31.2	24.6	Total angler-days = 44,005
Perch	0.01	0.02	0.3	6.0	5.7	3.2	Percentage interviewed = 7.5
							Percentage days car counts obtained = 34.8
							Average length of trip = 3.2 hours

* Percentage of anglers catching limit of whitefish = 10.0.

perch were small (average 6 ins. and 0.3 lbs.). However, anglers caught fish up to one pound in a few instances.

Approximately 75 percent of the fishermen were successful in catching at least one fish of any species. An estimated 10 percent of the anglers caught their limit of 10 whitefish. Slightly over 50 percent of those interviewed were successful in catching at least one whitefish. The success of pike and perch anglers was lower, however, it was evident that most anglers were primarily after whitefish.

The average length of each trip was 3.2 hours. Time spent fishing depended on several factors; primarily angling success and weather (Appendix Table 2).

As the season progressed it became apparent that, while the greatest numbers of fishermen visited the lake on weekends and holidays, a small number of local anglers fished throughout the week. Table 2 indicates that a relatively few "expert" anglers are extremely successful in catching whitefish. About 73 percent of these individuals caught their limit. Local fishermen averaged over three times as many fish per hour of effort as the typical angler. Some of these fishermen visited the lake several times per week.

Fishing pressure

The amount of sport fishing on Wabamun Lake was estimated by utilizing actual hourly counts to determine the average number of cars on or at the lake for each daylight hour. Figure IV and Appendix Table 3 depict the relationship of angling pressure to the time of day. There

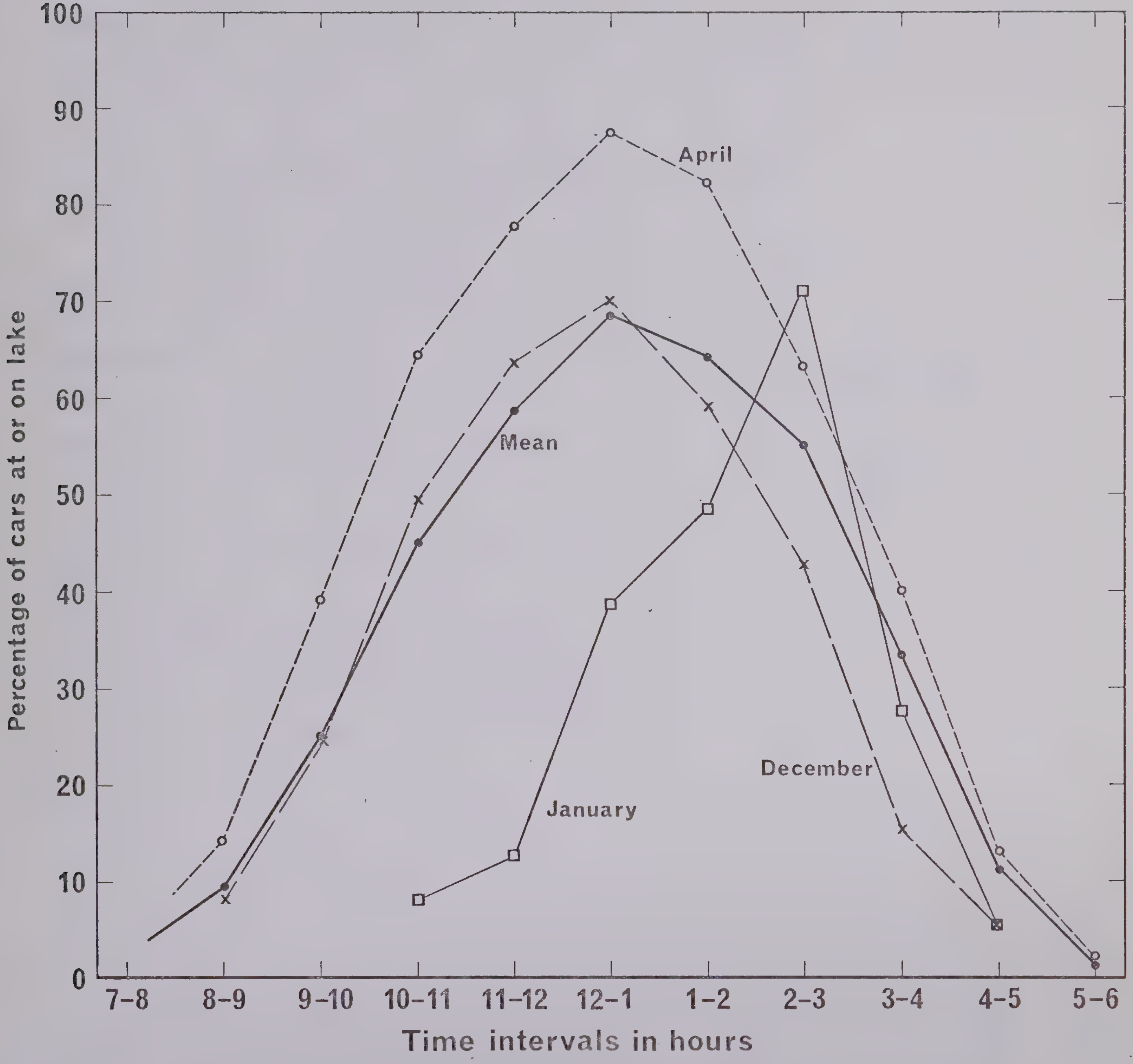

Figure IV; Relationship of angling pressure to time of day, Wabamum Lake, November to May, 1968-69.

Table 2. Summary of weekday creel census, Wabamun Lake, March 10-13, 1969.

	Numbers		Pounds*		Percent catching limit	
	Per angler	Per angler-hour	Per angler	Per angler-hour		
Total	8.1	2.06	13.7	3.5	-	
Whitefish	7.9	2.01	13.4	3.4	73.3	Number of anglers interviewed = 46
Pike	0.1	0.03	0.3	0.1	-	Anglers all reside within 10 miles of lake.
Perch	0.1	0.02	0.1	0.1	-	

* Average sample weight - 1.7 for whitefish
3.0 for pike
0.3 for perch

is a significant though reasonable seasonal difference in the daily pattern. Peak attendance during January occurred between 2:00 p.m. and 3:00 p.m. while the usual peak approximated 1:00 p.m. The extended cold spell during January (Appendix Table 2) probably accounted for the shift. Seasonal changes in attendance were also caused by changes occurring in the number of hours of daylight.

Table 3 demonstrates the influence of temperature on angling intensity. There was a significant drop in both number of cars counted and average time spent fishing when the maximum temperature declined to 0° F or below. The observed reduction in time spent fishing during April did not seem to be because of inclement weather but rather because of flooding on the ice prior to spring breakup and exceptionally good fishing (Appendix Table 1).

Yield

Table 4 shows the manner in which the estimates of total numbers and pounds of each species were calculated. Estimates of the number of cars involved in angling were obtained by assuming that the mean curve shown in Figure IV adequately represents the relationship between fishing intensity and time. The hourly percentages (Appendix Table 3) were derived from weekend interviews. The hourly car counts obtained on weekends and weekdays were projected to daily totals by multiplying the number observed during any hour by the percentage necessary to raise it to 100 percent. A sample calculation follows: A count of 20 cars is obtained between 12:00 p.m. and 1:00 p.m.

Table 3. Relationship of fishing intensity and temperature, Wabamun Lake, 1968-69. (Data from Edmonton, Canada Department of Transport).

Date	Number of days maximum temperature 0° F or below	Average time spent fishing, hrs.	Mean number of cars during periods when maximum temperature 0° F or below	Mean number of cars per day	
				Weekend	Weekday
November	0	3.9	0	161	73[1]
December	9	3.2	9	185	79
January	26	1.6	27	32	21
February	1	3.7	39	185	87
March	0	4.2	0	225	115
April	0	2.6	0	112	62
Total	36	-	-	900	364
Mean	6	3.2	25	150	73

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[1] No car counts obtained on weekdays during November. Used average from other five months in calculations.

Table 4. Calculation of total yield estimates from Wabamun Lake, November to May, 1968-69.

	Average number cars per day			Average fish* per car			Number of days			Total			
			X			X			=	Numbers		Pounds	
	Weekdays	Weekends & holidays		Numbers	Pounds**		Weekdays	Weekends & holidays		Weekdays	Weekends & holidays	Weekdays	Weekends & holidays
Total	73	150		6.2	12.3		124	57		56,122	53,010	111,340	105,165
Whitefish	73	150		4.5	7.7		124	57		40,734	38,475	69,700	65,835
Pike	73	150		1.2	3.6		124	57		10,862	10,260	32,587	30,780
Perch	73	150		0.2	0.1		124	57		1,810	1,710	906	855

* Numbers calculated from interviews.

** Pounds = mean weight x number per car.

Figure 4 and Appendix Table 3 show that on the average during this hour 68 percent of the total anglers using the lake are fishing. The hourly count must be increased by 32 percent or six cars to give the estimated daily total. Therefore there were 26 cars on the lake on this date. The mean values of 73 and 150 were calculated from monthly figures (Table 3).

The angling yield of fish approximated 200,000 pounds, of which just nearly 70 percent was lake whitefish (Table 5). Total production for the lake was calculated to be 5.0 fish weighing 9.6 pounds per acre. While the number of whitefish harvested was highest, pike constituted 31.3 percent of the catch by weight.

Miscellaneous characteristics

The creel survey showed that virtually all anglers fished with only one line even though regulations permit the use of three.

Table 6 shows that a variety of lures and baits were used. The most popular lures proved to be small "Len Thompson" spinners and "Russian" hooks. Smelt was the most common type of bait observed.

As expected, most of the fishermen interviewed resided in the city of Edmonton (Table 7). Virtually all of the remaining anglers utilizing the fishery came from cities, towns, and villages within a sixty mile radius of the lake. Two fishermen from Saskatoon, Saskatchewan were encountered.

Discussion

The creel survey, though covering only 7.5 percent of the

Table 5. Summary of angling yield, Wabamun Lake, November to May, 1968-69.

	Yield		Yield per acre		Percentage composition	
	Numbers	Pounds	Number	Pounds	Number	Weight
Total	103,851	200,663	5.0	9.6	-	-
Whitefish	79,209	135,535	3.9	6.5	78.0	67.7
Pike	21,122	63,367	1.0	3.0	20.0	31.3
Perch	3,520	1,761	0.1	0.1	2.0	1.0

Table 6. Type of bait or lure used, Wabamun Lake, 1968-69.

	Len Thompson		Russian Hook		Unnamed Lures		Miscellaneous*		Smelt	
	no.	%	no.	%	no.	%	no.	%	no.	%
November	25	43.1	12	20.7	11	18.9	3	5.2	7	12.1
December	137	44.2	145	46.8	13	4.2	9	2.9	6	1.9
January	12	38.7	13	41.9	2	6.5	-	-	4	12.9
February	104	40.1	99	38.2	52	20.1	2	0.8	2	0.8
March	184	39.1	221	46.9	44	9.3	1	0.2	21	4.5
April	53	50.4	30	28.6	17	16.2	-	-	5	4.8
Average	85.8	41.8	86.7	42.1	23.2	11.3	2.5	1.2	7.5	3.6

* Includes Canadian Wiggler, flies and various types of jigs.

Table 7. Residence of anglers, Wabamun Lake Survey, 1968-69.

Radial distance from lake, miles	City, Town or Village	Number of cars	Percentage of total for radius
0 - 10	Wabamun	19	3.9
	Fallis	14	
	Seba	15	
	Gainford	2	
10 - 20	Tomahawk	42	9.4
	Entwistle	13	
	Evansburg	59	
	Onoway	15	
	Gunn	1	
	Berrymoor	1	
	Duffield	1	
20 - 30	Stony Plain	24	5.8
	Spruce Grove	16	
	Wildwood	14	
	Drayton Valley	21	
30 - 40	Cynthia	1	7.5
	Devon	2	
	Barrhead	19	
	Rochfort Bridge	13	
	Mayerthorpe	40	
	Sangudo	15	
	Green Court	5	
	Granada	2	
40 - 50	Edmonton	927	72.1
	Lodgepole	2	
	Leduc	2	
50 - 60	Whitecourt	2	0.3
	Fort Saskatchewan	1	
	Ardrossen	1	
60 +	Anselmo	1	1.0
	Calgary	1	
	Lacombe	4	
	Redwater	2	
	Wetaskiwin	2	
	Tofield	1	
	Saskatoon	2	

fishermen, points out the magnitude of the fish harvest, particularly lake whitefish, by anglers. The recreational importance of this winter fishery is magnified when it is realized that it provided approximately 44,000 man-days of angling during the period from November to May (Table 1).

Wabamun Lake has consistently been commercially fished for at least the last 25 years (Table 8). The harvest is composed mainly of lake whitefish (96%). The catch of whitefish declined drastically during the early 1960's but has since recovered to a sistained annual level of about 50,000 pounds. This amount is about seven times less than the 1944 through 1961 average of 339,208 pounds.

Table 9 presents the average commercial production of fish in pounds per acre. The average yield for the last decade is many times less than past levels for whitefish and has stabilized at about 2.6 pounds per acre.

The commercial removal of pike follows a pattern similar to whitefish and has stabilized at the relatively low level of 0.1 pounds per acre.

The commercial harvest of perch is negligible.

Table 10 indicates that angling production of whitefish for six months (6.5 lbs./acre November - May) is currently more than twice as great as commercial production (2.7 lbs./ac.). The total annual harvest of whitefish, including the unestimated sport catch from May to November probably approximates ten pounds per acre. The estimated weight of the angler harvest of pike (3.0 lbs./ac.) is 30 times greater than that caught in nets.

Table 8. Commercial fishing harvest, Wabamun Lake, 1944 through 1969.

Season	No. of Licence	Mesh Size	Lake Whitefish	Pike	Perch	Mixed	Ling	Suckers	Total
44/45	791	5½"	318,201	700					318,901
45/46	997	"	338,400	500					338,900
46/47	1,299	"	532,779		844				533,623
47/48	1,422	"	369,117						369,117
48/49	1,163	"	300,530						300,530
49/50	1,049	"	277,615	8,105					285,720
50/51	1,504	"	300,397	6,188		6,494			313,079
51/52	1,773	"	248,558	8,069		3,163			259,790
52/53	1,364	"	138,645	2,728		1,364			142,737
53/54	1,222	"	198,893	1,824		390			201,107
54/55	1,066	"	403,465	1,640					405,105
55/56	910	"	1,056,000	375					1,056,375
56/57	1,188	"	451,743	1,020					452,763
57/58	1,314	"	334,095	2,665		1,400			338,160
58/59	977	"	250,280	56,526		35,368			342,174
59/60	817	"	121,430	43,215		12,654			177,299
60/61	610	"	126,390	44,229		15,253			185,872
Total	19,466		5,766,538	177,784	844	76,086	-	-	6,021,252
Average	1,145		339,208	10,458	50	4,476	-	-	354,191
61/62	Season closed								
62/63	106	5½"	3,180	1,070		860			5,110
63/64	66	"	7,065	840					7,905
64/65	Season closed								
65/66	137	"	90,000	1,650		1,000			92,650
66/67	72	"	23,000	250			680	400	24,330
67/68	77	"	52,102	1,208	10		1,125	1,717	56,162
68/69	52	"	55,898	1,919			7,590	6,516	71,923
Total	510		231,245	6,937	10	1,860	9,395	8,633	258,080
Average	85		38,541	1,156	2	310	1,566	1,439	43,013
Grand Total	19,976		5,997,783	184,721	854	77,946	9,395	8,633	6,279,332
Average	869		260,773	8,031	37	3,389	408	375	273,014

Table 9. Commercial yield, Wabamun Lake, 1944 through 1969.

Seasons	Average no. of licences	Average production, pounds per acre						
		Lake White-fish	Pike	Perch	Mixed	Ling	Suckers	Total
44/45-48/49	1,134.4	17.8	0.1	0.1	-	-	-	17.8
49/50-53/54	1,382.4	11.1	0.2	-	0.1	-	-	11.5
54/55-58/59	1,091.0	23.9	0.6	-	0.3	-	-	24.8
59/60-63/64	399.7	3.1	1.0	-	0.3	-	-	4.5
64/65-68/69	84.5	2.6	0.1	0.1	0.1	0.1	0.1	2.9
Total	4,092.0	58.5	1.9	0.1	0.7	0.1	0.1	61.5
Average	818.4	11.7	0.4	-	-	-	-	12.3

Table 10. Combined yield of fish from Wabamun Lake, 1968-69.

	Pounds per acre			
	Total	Whitefish	Pike	Perch
Sport - November-May, 1968-69	9.6	6.5	3.0	0.1
Commercial - May, 1969	2.8	2.7	0.1	nil
Total	12.4	9.2	3.1	0.1
Percentage by which sport harvest exceeds commercial harvest	242.9	140.7	290.0	-

Current regulations permit fishermen to catch a daily maximum limit of ten lake whitefish as well as allowing a maximum possession limit of twenty whitefish[1]. The conversion of these limits to pounds using the average weight 1.7 pounds reveals that an angler can keep 17 pounds of fish each day and have 34 pounds at home. Such a liberal limit can result in wastage of fish.

It appears that angling for whitefish is popular just as much for its food producing capabilities as for the sport it provides. Thus, regulations should take into consideration the sporadic nature of the angling success. The interviews indicated that only 10 percent of the anglers interviewed caught their limit of whitefish. The inconsistency of fishing success is illustrated in Appendix Table 1 and Table 12. It is also apparent that there is currently no shortage, and perhaps an overabundance, of whitefish inhabiting the lake. Thus even though fish may occasionally be wasted under existing regulations the present limit is justified. However, if the whitefish population deteriorates in the future then the limit will have to be reduced.

Table 11 shows that while both the sport and commercial harvest of whitefish exploit the same age classes most heavily the gill nets are consistently selective towards the larger members of each group. Eighty-three percent of each sample consisted of individuals eight to twelve years of age.

[1] Province of Alberta. 1968. SOR/68-178, Canada Gazette Part II, Volume 102, Number 10.

Table 11. Comparative age structure and average size composition of lake whitefish samples from commercial and angling operations on Wabamun Lake, 1968-69.

Year Class*	5	6	7	8	9	10	11	12	13
Commercial: 5½-inch mesh, 100 fish, May, 1968.									
Percent	2	5	5	20	24	26	13	5	-
Mean fork length, ins.	13.7	14.8	15.0	15.3	15.6	15.6	16.3	16.7	-
Mean weight per fish of total sample = 2.0 pounds									
Angling: 100 fish, March, 1969.									
Percent	-	2	6	11	19	27	26	7	2
Mean fork length, ins.	-	13.6	15.0	14.8	15.1	15.3	15.5	15.9	18.1
Mean weight per fish of total sample = 1.7 pounds									

* Each mark on scale counted as annulus.

The similarity of the age and size composition of the two samples, along with the observed small annual increases in length, suggest that the whitefish population consists of many slow growing fish that exhibit a wide range of size variation in each year class. Competition for food is probably one important reason for the stunted nature of the population and also the unusual success of the fishery.

The importance of the recreational fishery as opposed to the commercial fishery is indicated by the fact about 44,000 people participated in winter angling while the net fishery has involved an average of only 85 people over the past six seasons. At present a valid economic comparison of the two types of harvest is unavailable. However, observations suggest that the sport fishery for just six months of the year may involve much more money than does the commercial enterprise.

Table 12 and Appendix Table 1 illustrate the variability of fishing success throughout the census period. Reasons for the observed differences are difficult to determine but likely are mainly concerned with differences in the behavior of the fish and the weather. Both party and individual success for whitefish was lowest during the inclement month of January. During this time, however, the success in catching pike and perch was relatively high. November and April, particularly April, provided the most favorable fishing.

Some of the variability in the census results stems from the sampling pattern and the nature of the fishery. Table 12 shows that 64 percent of the interviews were obtained from locations on the west portion of the lake. Table 12 also indicates that anglers fishing for

Table 12. Percentage of anglers successful in catching at least one fish (calculated as if each species fished for separately). Wabamun Lake, 1968-69.

Month	No. of cars	No. of anglers	Cars				Anglers			
			Whitefish	Pike	Perch	Total	Whitefish	Pike	Perch	Total
November	53	115	52.8	45.3	1.9	100.0	48.7	31.3	0.9	80.9
December	309	753	50.2	27.8	9.4	87.4	28.3	22.1	3.3	53.7
January	26	57	15.4	42.3	11.2	69.2	19.3	28.1	5.3	52.6
February	322	796	58.4	28.4	1.9	88.7	56.5	24.4	1.0	81.9
March	443	1,162	59.6	23.5	5.0	88.0	49.1	12.7	2.9	64.6
April	117	279	82.0	40.1	9.4	131.6	83.9	29.0	6.5	119.4
Total	1,270	3,162	57.9	34.6	5.7	94.1	51.3	24.6	3.2	75.5
East end	36.1% 459	32.0% 1,013	42.0	32.2	8.7	83.0	37.7	22.5	5.1	52.9
West end	63.9% 811	68.0% 2,149	66.8	18.6	3.9	89.4	67.7	10.0	2.2	75.8

whitefish in this area were more successful than east-end fishermen. The opposite relationship was revealed for pike and perch. It thus appears that the west portion of the lake produced more favorable whitefish angling while the east portion produced better fishing for pike and perch.

The geographical difference in fishing success may be due, at least in part, to ecological changes more favorable to pike and perch caused by the warm water effluent of the Calgary Power Plant.

Further evidence indicating the ecological influence of the warm water effluent was found when the sample of pike was divided according to catch location. Those fish caught in the "warmwater" zone averaged 3.0 inches more in length and 0.9 pounds more in weight than their western counterparts. A great deal more study is required to accurately determine the effects of the warm water on fish habitat.

Survey results did not indicate a similar relationship for whitefish and perch.

The utilization of the fishery was probably somewhat lower than usual because of the intensity and duration of the January cold spell. Given a mild winter the November to May harvest of whitefish will probably approximate 150,000 pounds. It is also reasonable to assume that the fishing pressure will increase as the fishery becomes more publicized.

Only a limited amount of comparative creel census information is available. Table 13 indicates that the catch per unit effort on Lake Wabamun significantly exceeds that on Pigeon Lake. Annual

Table 13. Comparison of creel census surveys on Wabamun and Pigeon Lakes.

	No. of anglers interviewed	Angler-hours	Mean length of trip, hrs.	Number per angler hour			Total
				Whitefish	Pike	Perch	
Pigeon Lake (1966-67)[1]	1,442	5,495	3.8	0.2	0.01	0.1	0.3
Wabamun Lake							
1964[2]	527	1,598	3.0	0.6	0.1	0.3	1.0
1965[2]	361	1,061	2.9	0.4	0.08	0.06	0.5
1968-69	3,162	10,118	3.2	0.6	0.2	0.02	0.8
Average	1,350	4,259	3.0	0.5	1.0	1.0	0.8

[1] Hunt, C. W. 1966-67. Winter creel census on Pigeon Lake. Manuscript Rept. to Alta. Div. of Fish & Wildl. (in preparation).

[2] Paterson, R. J. 1966. Ice fishing creel census, Alta. Lands, Forests, Parks, & Wildl. 9(1): 20-22.

variability of the harvest on Wabamun Lake is also apparent. Fishing success for whitefish and pike was relatively consistent during the three surveys, however, the catch per angler-hour of perch varied considerably ranging from 0.3 in 1964 to 0.02 during 1968-69. The drastic reduction in success for perch might well reflect changes in species preference and angling technique but could also be a function of access. During the 1964 season travel on the ice was restricted by heavy snow, forcing anglers to concentrate in shallower water which is good perch habitat. The tremendous increase in snowmobiles now alleviates the problem of access.

Summary

1. A partial creel survey was carried out on Wabamun Lake from November 1, 1968 through April 30, 1969.

2. The interviewing of anglers was conducted on weekends and holidays only. Car counts were made both during the week and on weekends. Census locations were variable depending upon the number of available clerks and where anglers were concentrated.

3. Ice fishermen caught a total of 0.8 fish weighing 1.7 pounds for each hour of effort. Nearly 80 percent of the catch (0.6 fish and 1.1 lbs./angler hour) was lake whitefish. About 75 percent of all anglers were successful in catching at least one fish while slightly over half (51%) caught at least one whitefish. The average fishing trip lasted 3.2 hours. The average catch of whitefish per day was 1.9.

4. Whitefish averaged 15.5 inches in length and 1.7 pounds in weight. The mean weights of pike and perch were 3.0 and 0.3 pounds, respectively.

5. An estimated 44,000 man-days were spent fishing during the survey period. Anglers caught approximately 135,000 pounds of whitefish, 60,000 pounds of pike and 1,700 pounds of perch.

6. The yield for whitefish and pike was calculated to be 6.5 pounds and 3.0 pounds per acre, respectively. These amounts greatly exceed the present commercial harvest.

7. The age structures of samples of whitefish from commercial and angling catches show that both methods exploit the same year classes (8-12) most heavily.

8. Fishing pressure was most intense between the hours of 11:00 a.m.

to 3:00 p.m. Attendance was markedly influenced by the weather. During the January cold spell both the number of cars present and the time spent fishing declined.

9. Over 70 percent of the fishermen interviewed reside in Edmonton.

Recommendations

1. Because it appears that Wabamun Lake is capable of producing a combined annual harvest approximating 200,000 pounds of whitefish no increase or decrease is recommended for the commercial limit. If a serious reduction in abundance of whitefish should occur in the future then the commercial fishery should be closed down in favor of a more important sport fishery.

2. The sport harvest of pike is significant. The population should be conserved in favor of angling. It is recommended that commercial fishing be restricted to the deeper water of the lake.

3. Despite the fact that present regulations allow anglers to have 20 whitefish in their possession at one time and on occasion meat is wasted the inconsistency of the fishery does not allow the limit to be reached very often. It is, therefore, recommended that the current limits be retained.

4. Periodic creel surveys, car counts and sampling of fish should be carried out in the future to maintain surveillance of the fishery.

Literature Cited

Hunt, C. W. 1966-67. Winter creel census on Pigeon Lake. Manuscript Rept. to Alta. Div. of Fish & Wildl. (in preparation).

Paterson, R. J. 1966. Ice fishing creel census. Alta. Lands, Forests, Parks, and Wildl. 9(1): 20-22.

Province of Alberta. 1968. SOR/68-178, Canada Gazette Part II, Volume 102, Number 10.

Appendix

Appendix Table 1. Catch per hour of three species of fish, Wabamun Lake 1968-69.[1]

	Fish caught	Angler-hours	Numbers				Pounds			
			Whitefish	Pike	Perch	Total	Whitefish	Pike	Perch	Total
November	396	456	0.48	0.39	0.002	0.872	0.81	1.19	0.001	2.001
December	938	1987	0.33	0.13	0.002	0.472	0.55	0.40	-	0.951
January	67	135	0.21	0.28	0.007	0.497	0.35	0.85	0.002	1.205
February	1845	2915	0.62	0.01	0.002	0.632	1.04	0.03	0.001	1.071
March	2337	4995	0.40	0.05	0.030	0.480	0.67	0.15	0.010	0.830
April	1162	511	1.81	0.17	0.050	2.030	3.04	0.52	0.020	3.590
Average	1124	1833	0.64	0.17	0.018	0.831	1.08	0.52	0.006	1.608

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[1] Calculated from angler interviews.

Appendix Table 2. Weather record for Edmonton City, 1968-69. (Data from Canada Department of Transport).

Date	Temperature (° F) mean			Wind (m.p.h.) mean		
	Maximum	Minimum	Mean from max. and min.	Average speed from anemometer	Prevailing direction (by hours)	Maximum for one hour with direction
November	37.1	22.8	30.0	7.5	S	NW 23
December	9.7	-3.3	3.2	8.7	NW	NW 22
January	-8.1	-21.7	-14.9	6.1	NW	N 28
February	18.3	1.7	10.0	6.1	S	SE 19
March	31.9	13.6	22.8	7.5	S	NE 25
April	55.2	35.0	45.1	10.6	S	NE 26

Appendix Table 3. Relationship of fishing intensity to time of day, Wabamun Lake, 1968-69.

Month	Percentage of cars at or on the lake per hourly interval									
	8-9	9-10	10-11	11-12	12-1	1-2	2-3	3-4	4-5	5-6
November	13.8	24.5	47.2	62.3	62.3	62.3	50.9	47.2	35.8	-
December	7.8	24.5	49.3	63.5	70.2	58.7	41.8	15.1	5.0	-
January	-	-	8.3	12.5	38.3	47.9	71.3	26.7	5.0	-
February	7.1	22.4	43.1	60.1	73.7	71.7	53.8	39.3	14.9	1.5
March	13.6	39.7	57.7	71.8	76.7	64.1	51.4	31.7	12.2	1.9
April	14.4	38.9	63.5	76.9	86.6	81.7	63.0	40.4	12.5	1.0
Average	9.5	25.0	44.9	57.9	68.0	64.5	55.5	33.4	14.2	1.1